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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/791,201	03/02/2004	Thomas L. Mikes	10004281-1	2002

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EXAMINER

BOUTSIKARIS, LEONIDAS

ART UNIT PAPER NUMBER

2872

DATE MAILED: 09/13/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

## Office Action Summary

Application No.

10/791,201

Applicant(s)

MIKES ET AL.

Examiner

Leo Boutsikaris

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

### Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

### Status

- 1) ☒ Responsive to communication(s) filed on 02 March 2004.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

### Disposition of Claims

- 4) ☒ Claim(s) 1-16 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-16 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

### Application Papers

- 9) ☒ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 02 March 2004 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

### Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some \* c) ☐ None of:
- ☐ Certified copies of the priority documents have been received.
  - ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
  - ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

### Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☐ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)  
Paper No(s)/Mail Date \_\_\_\_\_.

- 4) ☐ Interview Summary (PTO-413)  
Paper No(s)/Mail Date \_\_\_\_\_.
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: \_\_\_\_\_.

## **DETAILED ACTION**

### ***Specification***

The abstract of the disclosure is objected to because it contains the word “comprises”.

Correction is required. See MPEP § 608.01(b).

### ***Claim Objections***

Claims 14-16 are objected to because of the following informalities:

In claim 14, line 8, the word “grating” should be inserted after the word “diffraction” for better clarity.

Claims 15-16 inherit the deficiency of claim 14 from which they depend.

Appropriate correction is required.

### ***Claim Rejections - 35 USC § 102***

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

Claims 1, 4-9, 12-16 are rejected under 35 U.S.C. 102(b) as being anticipated by Ludman (US 4,387,955).

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Regarding claims 1, 8-9, 14-16, Ludman discloses an optical system and a method for multiplexing/demultiplexing optical signals, wherein the system comprises a grating substrate 42 supporting a holographically formed diffraction grating A and an array mount (46, 71) for defining relative locations of point sources of light, e.g., points 48, 52, 53, 54, the array comprising:

recording points 48, and any one of points 52-54, defining locations of point sources of recording light used to illuminate the grating during fabrication of the grating; and

use points, e.g., 48, 52-54, defining locations of light apertures used in operation of the grating (i.e., the multiplexing/demultiplexing), the use points having a defined positional relationship with the use points and the light apertures in optical communication with the grating A (Fig. 3, lines 1-31, col. 6).

It is noted that point 48 coincides in space with point X used in the recording of the grating A (lines 11-16, col. 6). Similarly, one of the points 52-54 coincides with point 38 used in the recording of grating A (lines 25-31, col. 6).

Regarding claims 4, 12, the apertures constituting the use points comprise the ends of optical fibers 44, 64, 66, 68 (see Fig. 3).

Regarding claim 5, fibers 44, 64, 66, and 68 are positioned in grooves formed in the respective mounts, which implies that there is an entrance slit and at least one exit slit in the array mounts.

Regarding claims 6, 13, the use points are the same as the recording points.

Regarding claim 7, grating A includes a thin metallic reflective layer (lines 20-26, col. 5).

***Claim Rejections - 35 USC § 103***

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

Claims 2, 10 are rejected under 35 U.S.C. 103(a) as being unpatentable over Ludman (US 4,387,955) in view of Maeda (US 4,824,193).

Ludman discloses all the limitations of said claims except for showing that two optical fiber are used to emit light for the recording of the grating, instead of just one (see Fig. 1 in Ludman). Maeda discloses a holographic multiplexer/demultiplexer device, wherein a holographic grating 10 formed by the recording of the interference pattern of light beams emitted by two optical fibers 7 and any one of 8a-8e, is used to multiplex/demultiplex light between an input fiber 7 and output fibers 8 (Figs. 2, 3A). It would have been obvious to one of ordinary skill in the art at the time the invention was made to use two optical fibers for holographically recording the grating in Ludman's system, since incorporating optical fibers in the optical set-up is simpler than using other optical components such as mirrors, lenses etc.

Claims 3, 11 are rejected under 35 U.S.C. 103(a) as being unpatentable over Ludman (US 4,387,955).

Ludman discloses all the limitations of said claims except for showing that a pinhole is used at the point source location during the recording of the grating. It would have been obvious to one of ordinary skill in the art at the time the invention was made to use a pinhole at the point

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source location, since Official Notice is taken that pinholes are widely used as simple spatial filters, in order to clean up optical beams used in holographic recording.

### *Conclusion*

The prior art made of record and not relied upon is considered pertinent to applicant's disclosure. Laudo (US 2004/0096150, Fig. 1) discloses an optical multiplexer/demultiplexer wherein a grating 30, which may be formed holographically, is used in conjunction with an array mount 10.

It is suggested by the examiner that Applicant amends the claim language, so that it emphasizes the fact that the recording of the grating and the multiplexing/demultiplexing operation is conducted in a "single" step, using only one substrate supporting the optical fibers used for both the recording and the multiplexing/demultiplexing operation. The use of terms such as "recording points" and "use points" is too broad and reads on the conventional "two-step" process, where the grating is first recorded and then it is affixed to the array mount.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Dr. Leo Boutsikaris whose telephone number is 571-272-2308.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR

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system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

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Primary Patent Examiner, AU 2872  
September 9, 2005



**LEONIDAS BOUTSIKARIS**  
**PRIMARY EXAMINER**